AiM User guide

ECU connection of AiM devices via OBDII

Release 1.02

This tutorial explains how to connect AiM devices to the vehicle ECUs using an OBDII Protocol.

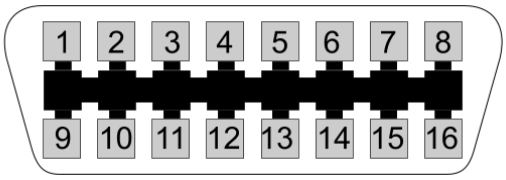
1 OBDII: protocols, pinout and position

OBDII is a standard Diagnostic system introduced in the USA at the end of the nineties. You can use it to connect your AiM device to the vehicle ECU. It supports different communication. AiM devices support the following protocols.

Communication protocol	**MXL1**	**ECU Bridge**	**EVO4**	**SoloDL**	**MXG**	**MXL2**
ISO15765/4 – CAN	√	√	√	√	√	√
ISO9141/2 – K Line		√	√	√	√	√
ISO14230/4 – KWP200 – K Line		√	√	√	√	√
J1850		**Not supported by AiM devices**				

1.1
OBDII plug pinout

Car OBDII plug is shown here below on the left while its drawing is on the right.



Here follows the connector standard pinout.

OBDII connector pin	Pin function
2	Positive bus line – SAE J1850 protocol: **not supported by AiM devices**
4	Chassis GND
5	GND signal
6	CAN High – ISO 15765-4 and SAE J2234 protocols
7	K line – ISO 9141-2 and ISO 14230-4 protocols
10	Negative bus line – SAE J1850 protocol: **not supported by AiM devices**
14	CAN low – ISO 15765 and SAE J2234 protocols
15	L line – ISO 9141-2 and ISO 14230-4 protocols
16	Battery supply

1.2
OBDII plug position

OBDII plug can be placed in different positions in the car cockpit. Some car manufacturers use to protect the plug with cover, caps, ashtrays etc... Here below the most common positions of OBDII plug are indicated.

2
Connection of AiM devices to OBDII plug

Here follow description of OBDII connection of the AiM devices.

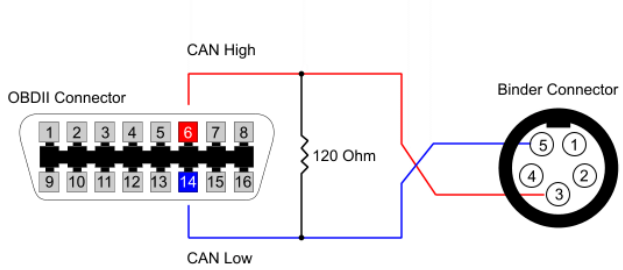
2.1
Connection of ECU Bridge

The ECU Bridge to be connected to OBDII port part number is **X90BGCK12MA**.

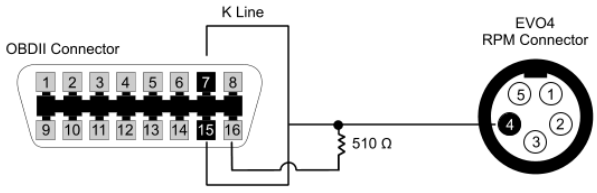
2.2
Connection of EVO4

You can connect EVO4 to your ECU via OBDII using a proper cable. AiM has developed two dedicated cables: one for CAN line and the other for K line.

EVO 4 CAN cable for connection to the ECU via OBDII plug part number is: **V02563040**. It has to be connected to EVO4 Binder connector labelled "ECU". Here below you see the connection scheme on the left and the cable electrical scheme on the right.



EVO4 K line cable for connection to the ECU via OBDII plug part number is **V02563050**. It has to be connected to EVO4 Binder connector labelled "RPM". Here below you see the connection scheme on the left and the cable electrical scheme on the right.



2.3
Connection of SoloDL

You can connect SoloDL to your vehicle ECU via OBDII plug using a proper cable. AiM supplies this cable with two different length. Their part numbers are:

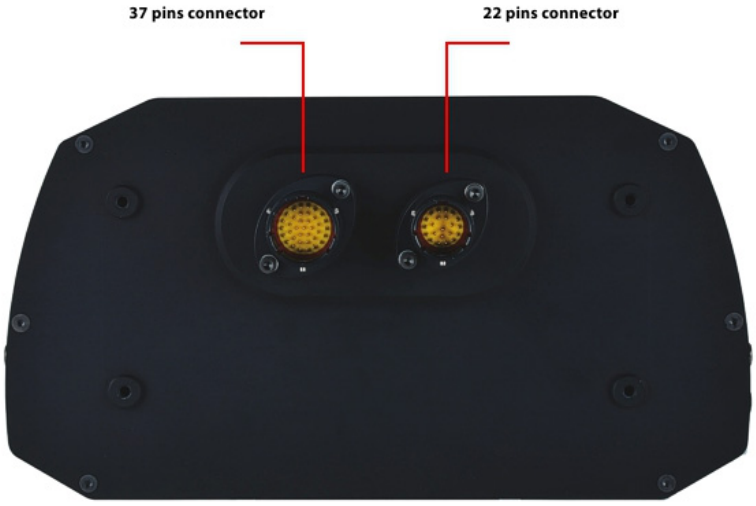
- **V02569010**: cable length 2 m
- **V02569090**: cable length 1,2 m

They have to be connected to SoloDL 7 pins right Binder connector. Here below you see connection scheme.

Please note: CAN termination resistor is integrated in the cable while K line pull-up resistor is integrated in SoloDL.

2.4
Connection of MXG

You can connect MXG to your vehicle ECU via OBDII plug using the 37 pins connector on the back of MXG.



Here are the pins to be used for ECU connection.

37 pins connector pin	Function
8	ECU CAN High
9	ECU CAN Low
11	ECU K-line
10	GND

Please note: CAN termination resistor and K line pull-up resistor are integrated in MXG.

2.5
Connection of MXL2

You can connect MXL2 to your vehicle ECU via OBDII plug using the 37 pins connector on the back of MXL2.

Here are the pins to be used for ECU connection.

37 pins connector pin	**Function**
8	ECU CAN High
9	ECU CAN Low
11	ECU K-line
10	GND

Please note: CAN termination resistor and K line pull-up resistor are integrated in MXL2.

3
AiM device configuration

Before connecting your AiM device to the OBDII plug, set it up via software. Connect your device to the PC through the USB cable. The software to be used changes according to the device you are using.

Race Studio 2 software is to be used for:

- MXL first generation
- ECU Bridge
- EVO4
- SoloDL

Race Studio 3 software is to be used for:

- MXG
- MXL2

3.1
AiM device configuration with Race Studio 2

Run Race Studio 2 software and select:

- Device Configuration –> Select the device you are using;
- select the configuration or press “New” to create a new one;
- select ECU manufacturer “OBDII” and – according to your vehicle OBDII protocol – ECU Model
  - “CAN”
  - "ISO9141_2"
  - "KWP2000_FAST_INIT"
  - "KWP2000_SLOW_INIT"
- transmit the configuration to the device pressing “Transmit”.

3.2
AiM device configuration with Race Studio 3

Run Race Studio 3 software and:

- create a proper configuration pressing “New Configuration” button in the software main view
- select the logger you are using (MXG or MXL2)
- press the central button of "New configuration" panel and "Choose ECU" panel appears
- select ECU manufacturer “OBDII” and – according to your vehicle OBDII protocol – ECU Model
  - “CAN”
  - "ISO9141_2"
  - "KWP2000_FAST_INIT"
  - "KWP2000_SLOW_INIT"
- transmit the configuration to the device pressing “Transmit” in the new view.

4
OBDII protocol

No matter which OBDII protocol your vehicle is using, channels received by AiM devices via OBDII plug should be these reported below. **Please note**: the availability of all channels depends on the vehicle manufacturer.

ID	CHANNEL NAME	FUNCTION
ECU_1	OBDII_RPM	RPM
ECU_2	OBDII_SPEED	Vehicle speed
ECU_3	OBDII_ECT	Engine coolant temperature
ECU_4	OBDII_TPS	Throttle position sensor
ECU_5	OBDII_IAT	Intake air temperature
ECU_6	OBDII_MAP	Manifold air pressure
ECU_7	OBDII_MAF	Manifold air flow
ECU_8	OBDII_FUEL_LEV	Fuel level
ECU_9	OBDII_PPS	Pedal position sensor